

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A vertical bag form-fill-seal packaging machine for forming bags by sealing a continuous tubular packaging material in which a product to be packaged is filled, for separating and ejecting each of the bags, and for ejecting the bags to a downstream device, the machine comprising:

a first transfer unit for receiving separated bags that have been previously separated and are supplied to the first transfer unit by being dropped thereto in a first direction such that the bags do not contact the first transfer unit until after the bags are separated, said first transfer unit transferring the separated bags to the downstream device by carrying the separated bags in a second direction, the second direction being not parallel to the first direction,

a first drive unit for driving the first transfer unit, and

a control unit for controlling the first drive unit, such that a traveling speed of the first transfer unit is equivalent to or a little higher than a speed at which the bags are transferred to the first transfer unit.

2. (Previously Presented) The machine as defined in claim 1, wherein the control unit controls a posture of the bags ejected from the first transfer unit.

3. (Original) The machine as defined in claim 1, wherein the first transfer unit is a belt.

4. (Canceled).

5. (Original) The machine as defined in claim 3, wherein the belt is inclined so that the bags move diagonally downward.

6. (Canceled).

7. (Previously Presented) The machine as defined in claim 1, wherein the first transfer unit comprises two belts for holding each of the bags in a sandwiched manner.

8. (Original) The machine as defined in claim 7, wherein the first transfer unit is such that a part of a transfer passage formed between the two belts is inclined so that the direction of the bag transfer changes as the bag moves therethrough.

9. (Original) The machine as defined in claim 7, further comprising a means for changing the distance between the two belts, wherein the control unit controls the means for changing the distance between the two belts according to the bags, so as to adjust the distance between the two belts.

10. (Original) The machine as defined in claim 8, further comprising a means for changing the distance between the two belts, wherein the control unit controls the means for changing the distance between the two belts according to the bags, so as to adjust the distance between the two belts.

11. (Currently Amended) The vertical bag form-fill-seal packaging machine as defined in claim 24, wherein the sealing is heat-sealing, the vertical bag form-fill-seal packaging machine further comprising a cooling unit for spraying a cooling gas on the sealed part of each of the bags while the bags are transferred through the transfer path defined between the two belts.

12. (Original) The machine as defined in claim 1, further comprising: a second transfer unit for receiving, transferring, and ejecting the bags transferred from the first transfer unit, and

a second drive unit for driving the second transfer unit, wherein the control unit further controls the second drive unit.

13. (Previously Presented) The machine as defined in claim 12, wherein the second transfer unit is a belt with a guide bar approximately orthogonal to a direction of transfer.

14. (Previously Presented) The machine as defined in claim 1, further comprising a memory storage unit for storing control settings for each set of products to be packaged, wherein the control unit performs control according to the control settings stored in the memory storage unit.

15. (Previously Presented) The machine as defined in claim 14, wherein at least one of the control settings to be stored in the memory storage unit is a speed of the first drive unit.

16. (Previously Presented) The machine as defined in claim 15, wherein the control settings include the interval at which the bags are ejected from the first transfer unit, and
the control unit is operatively connected to the downstream device, and provides data at least on the bag ejection time interval to the downstream device.

17. (Original) The machine as defined in claim 7, further comprising a memory storage unit for storing control settings for each set of products to be packaged, wherein the control unit performs control according to the settings stored in the memory storage unit.

18. (Previously Presented) The machine as defined in claim 17, wherein at least one of the control settings to be stored in the memory storage unit is a speed of the first drive unit.

19. (Previously Presented) The machine as defined in claim 18, wherein the control settings include the interval at which the bags are ejected from the first transfer unit, and

the control unit is operatively connected to the downstream device, and provides data at least on the bag ejection time interval to the downstream device.

20. (Currently Amended) A vertical bag form-fill-seal packaging machine for forming bags from a continuous packaging material received from a supply unit, filling a product to be packaged in the bags, and for ejecting the bags to a downstream device, the machine comprising:

a bag-forming/packaging unit, including

forming means for forming the packaging material received from the supply unit into a tubular shape,

pull-down means for transferring the tubular-shaped packaging material downward,

vertical sealing means for vertically sealing an overlapped part of the tubular-shaped packaging material,

transverse sealing means for transversely sealing the tubular-shaped packaging material to form the bags, and

separating means for separating and ejecting each of the bags; and

an ejecting unit including

first transfer means for receiving the separated bags that have been previously separated and are supplied to said first transfer means by being dropped thereto in a first direction from the bag-forming/packaging unit such that the bags do not contact the first transfer ~~unit~~ means until after the bags are separated, said first transfer ~~means~~ unit transferring the separated bags to the downstream device by carrying the separated bags in a second direction, the second direction being not parallel to the first direction,

first drive means for driving the first transfer means, and

control means for controlling a posture of the bags ejected from the first transfer means by controlling the first drive means.

21. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 20, wherein

said control means controls an interval at which the bags are ejected from the first transfer means.

22. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 20, wherein

said first transfer means includes a first belt.

23. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 22, wherein

the belt is inclined so that the bags move diagonally downward.

24. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 22, wherein

said first transfer means further includes a second belt, the first and second belts defining a transfer passage through which the bags can be transferred.

25. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 24, wherein

the transfer passage is bent such that a part of the transfer passage is inclined.

26. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 24, wherein

the ejecting unit further includes means for changing the distance between the two belts, such that a distance between the two belts is at least partially changed.

27. (Previously Presented) The vertical bag form-fill-seal packaging machine as

defined in claim 20, wherein

the ejecting unit further includes:

second transfer means for receiving the bags from the first transfer unit and
transferring and ejecting the bags to the downstream device, and

second drive means for driving the second transfer means, and

the control means further controls the second drive means.

28. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 20, wherein

the ejecting unit further includes memory storage means for storing control settings for each set of products to be packaged, and

the control means controls the first transfer means based on the control settings.

29. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 28, wherein

the control settings include a speed of the first transfer means.

30. (Previously Presented) The vertical bag form-fill-seal packaging machine as defined in claim 28, wherein

the control settings include an interval at which the bags are ejected from the first transfer means, and

the control means provides to the downstream device the interval at which the bags are ejected from the first transfer means.

31. (Currently Amended) A vertical bag form-fill-seal packaging machine for forming bags by sealing a continuous tubular packaging material in which a product to be packaged is filled, for separating and ejecting each of the bags, and for ejecting the bags to a downstream device, the machine comprising:

a belt for receiving separated bags that have been previously separated and are supplied to said belt by being dropped thereto in a first direction such that the bags do not contact the belt until after the bags are separated, said belt ~~first transfer unit~~ transferring the

separated bags to the downstream device by carrying the separated bags in a second direction, the second direction being not parallel to the first direction,

a motor for driving the belt, and

a control unit for controlling the motor, such that a traveling speed of the belt is equivalent to or a little higher than a speed at which the bags are transferred to the belt.

32. (Currently Amended) A vertical bag form-fill-seal packaging machine for forming bags from a continuous packaging material received from a supply unit, filling a product to be packaged in the bags, and for ejecting the bags to a downstream device, the machine comprising:

a bag-forming/packaging unit, including

a former for forming the packaging material received from the supply unit into a tubular shape,

a pull-down belt disposed below the former for transferring the tubular-shaped packaging material downward,

a vertical sealing mechanism disposed below the pull-down belt for vertically sealing an overlapped part of the tubular-shaped packaging material,

sealing jaws disposed below the vertical sealing mechanism for transversely sealing the tubular-shaped packaging material to form the bags, and

a cutter for separating and ejecting each of the bags; and

a forced ejecter including

a belt for receiving the separated bags that have been previously separated and are supplied to said belt by being dropped thereto in a first direction from the bag-forming/packaging unit such that the bags do not contact the belt until after the bags are separated, said belt ~~first transfer unit~~ transferring the separated bags to the downstream device by carrying the separated bags in a second direction, the second direction being not parallel to the first direction,

a motor for driving the belt, and

a control unit for controlling a posture of the bags ejected from the belt by controlling the motor.

Appl. No. 09/911,621
Amendment dated July 30, 2004
Reply to Supplemental Office Action of May 20, 2004